UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Lower Duwamish Waterway Site

Responsiveness Summary

for

Agreed Order/Administrative Order on Consent

and Remedial Investigation/Feasibility Study Scope of Work

Washington State Department of Ecology
U.S. Environmental Protection Agency

December 13, 2000

Contacts

Rick Huey
Project Manager
Washington State Department of Ecology
3190 160th Avenue SE
Bellevue, WA 98008-5452
425-649-7256
'rhue461@ecy.wa.gov'

Allison Hiltner
Project Manager
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle WA 98101
206-553-2140

Sally Marquis
Project Manager
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle WA 98101
206-553-0717

Cindy Colgate
Community Involvement Coordinator
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle WA 98101
206-553-1815

More Information

The Administrative Order on Consent, Statement of Work, and other site materials are available at these information repositories:

- South Park Community Center
  8319 Eighth Avenue South
  Seattle, WA 98101

- EPA Region 10 Records Center
  1200 Sixth Avenue
  Seattle, WA 98101

- Department of Ecology
  3190 160th Avenue SE
  Bellevue, WA 98008-5452

These documents are also available on the EPA Region 10 web site:

http://www.epa.gov/r10earth/

Click on “Index,” then “L,” and then “Lower Duwamish Waterway Site.”

Introduction
The Washington State Model Toxics Control Act (MTCA) Chapter 173-340 WAC requires that a minimum 30-day public comment period be held for MTCA Agreed Orders for site cleanup. The Lower Duwamish Waterway site Order (with attached Statement of Work) is a joint MTCA Agreed Order/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Order on Consent, and so must comply with the MTCA public involvement requirements.

This responsiveness summary addresses comments received during the August 2 - October 16, 2000 public comment period for the Lower Duwamish Waterway site, located in Seattle, WA. The Washington State Department of Ecology (Ecology) and the Environmental Protection Agency (EPA) jointly manage this site. Ecology and EPA have jointly reviewed and responded to all comments. Comments in this document have been paraphrased from the original, and redundant comments have not been repeated. Original comments are attached.

Public Comment Period
The public comment period was initially scheduled for August 2 – September 1, 2000. A public meeting/hearing was held on August 16, 2000. At the request of the Lower Duwamish Waterway site community advisory group, the comment period was extended to October 16, 2000, and an additional public meeting was held on October 4, 2000.

Community Advisory Group
The community advisory group consists of:

- People for Puget Sound,
- Environmental Coalition of South Seattle,
- Puget Soundkeeper Alliance,
- Waste Action Project,
- Duwamish Tribe,
- Green/Duwamish Watershed Alliance,
- Community Coalition for Environmental Justice.

The community advisory group is still open to membership. For further information, contact Cindy Colgate or Rick Huey (see above).

Public Notices/Fact Sheets
The following public notices and fact sheets were distributed in association with this site:

1. July 31 and August 14, 2000 Seattle Times display ads and flyer announcing comment period and public meeting/hearing,
2. August, 2000 fact sheet, announcing comment period and public meeting/hearing (distributed to about 650 addresses),
3. August 22, 2000 Ecology Site Register,
4. August 28, 2000 Seattle Times display ad announcing extension of comment period,
5. December 1, 2000 Federal Register announcing proposed Superfund-listing of site.
6. December 2000 fact sheet announcing proposed Superfund-listing of site.

Public Outreach Meetings/Presentations
The following public outreach meetings/presentations have taken place for this site:

1. March 2, 2000 meeting with the Greater Duwamish Business Council,
2. March 15, 2000 meeting with Environmental Coalition of South Seattle, and the Puget Soundkeeper Alliance,
3. May 11, 2000 meeting with the community advisory group,
4. June 1, 2000 meeting with community advisory group,
5. June 5, 2000 meeting with Waste Action Project,
6. July 13, 2000 meeting with Greater Duwamish Business Council,
7. August 16, 2000 meeting with community advisory group,
8. August 16, 2000 public meeting/hearing hosted by Ecology and EPA (attended by approximately 50 people),
9. September 19, 2000 meeting with Duwamish District Council,
10. October 4, 2000 public meeting hosted by community advisory group (attended by approximately 30 people),
11. October 5, 2000 meeting with Greater Duwamish Business Council,
12. October 15, 2000 presentation during Georgetown Neighborhood Tour,
13. October 23, 2000 meeting with community advisory group,
14. November 7, 2000 presentation during Coastal America Student Ocean Conference,
15. November 14, 2000 boat tour of Duwamish with community advisory group.

Public Comments and Responses

Comment #1: This site is highly contaminated and well studied. It should be proposed on the Superfund list.

Response: The site was proposed to EPA's National Priorities List on December 1, 2000.

Comment #2: Sediments can be contaminated from a variety of sources. The entire basin must be studied to determine what needs to be done—not just point discharges.

Response: Ecology and EPA acknowledge that sediments can be contaminated by both point and non-point sources. Source control efforts will address the entire range of potential sources, not just point discharges.

Comment #3: Businesses that currently drain to a combined system are exempt from NPDES storm water regulations. How will you implement source control for those businesses?

Response: This issue will be addressed as part of the source control efforts. Under the National Pollutant Discharge Elimination System (NPDES), Ecology issues a permit to the appropriate municipality to manage combined (storm water and sanitary waste) sewer systems. For the Lower Duwamish Waterway, King County regulates businesses that drain to the combined system. King County also has a pretreatment program to address discharges to their sanitary sewer system.

During heavy rain events, combined systems can overflow into the Lower Duwamish Waterway through Combined Sewer Overflows (CSOs). These CSO events can be a source of contamination to sediments in the waterway. Where a CSO is identified as a source control issue, Ecology can apply an effluent limit on the CSO and/or require source control. This may include requiring King County to implement source control efforts with businesses within the combined system, in order to meet their permit requirements and/or meet the State Sediment Management Standards.

Comment #4: Contaminated sediments are essentially capped, and should be left alone. Dredging will only spread contamination. Focus on prevention (source control) instead.

Response: The 1999 EPA Lower Duwamish River Site Inspection Report documents that surface sediment is contaminated at concentrations above State Sediment Management Standards in numerous locations in the waterway. Contaminants include polychlorinated biphenyls (PCBs), mercury and polycyclic aromatic hydrocarbons (PAHs), which can bioaccumulate through the food chain and potentially impact the health of humans and wildlife.

Cleanup of contaminated sediments in specific locations will likely be needed. Those areas requiring cleanup will be determined through the Remedial Investigation/Feasibility Study (RI/FS) process. Both dredging and capping will be considered as remedial options where appropriate, as they have both been shown to be effective remediation methods at cleanup sites in Puget Sound and elsewhere. Prevention of contamination to sediments (source control) will be addressed in order to eliminate ongoing sources of potential sediment contamination and to prevent recontamination of sediments that undergo cleanup.

Comment #5: Sign the Administrative Order on Consent so the work under the AOC can proceed.

Response: Ecology and EPA expect to sign the Administrative Order on Consent (AOC) following the proposed addition of the Lower Duwamish Waterway site to the National Priorities List (Superfund list), the completion of the public comment process, and agreement by signatories to any modifications proposed in response to the public comments. The Statement of Work (SOW) will be implemented following the signing of the AOC.

Comment #6: Develop the public participation plan as soon as possible.

Response: There are two steps to complete before a draft public participation plan for the site will be available. First, Ecology and EPA will conduct community interviews in order to provide input for the plan. Second, a draft public participation plan will be written by Ecology and EPA, incorporating information from the interviews, and providing information about how public involvement activities have been, and will be provided for this site. The plan will be available for public review this winter and it will be updated as needed. If you would like to be added to the list of persons to be interviewed to provide input for this plan, please contact Rick Huey or Cindy Colgate.

Comment #7: I would like the river cleaned up, and public access and habitat issues addressed.

Response: The goal of the Lower Duwamish Waterway RI/FS is to develop the information necessary to clean up contaminated sediments, and to control sources of sediment contamination to the waterway. When the cleanup process itself impacts habitat, mitigation of that impact is required—but restoration of habitat beyond mitigation is not a function of the CERCLA/MTCA remediation process.

However, while public access and habitat restoration are not directly addressed by the cleanup process, several other public entities, including the natural resource trustees and U. S. Army Corps of Engineers (Corps), are planning habitat restoration projects in the waterway and watershed. Ecology and EPA Lower Duwamish Waterway Site cleanup staff will work with the appropriate parties to coordinate the sediment cleanup process with opportunities for improving public access and habitat restoration.

Comment #8: Do storm drains from the King County International Airport run to the river? Will all of the activities that take place at the airport, including expansion plans, contaminate the river?

Response: Storm drains from the airport do discharge into the river. All potential sources of contamination to the sediments in the waterway will be considered, including the King County International Airport. Ecology and EPA will work with King County to determine if there are source control issues at the airport, and if any of the airport practices or expansion plans might result in contaminants reaching the waterway sediments. If a sediment source control issue is found at the airport, or anywhere within the drainages that lead to the waterway, then steps will be taken to control that source.

Comment #9: Don't waste time on studies; clean up the site quickly.

Response: Ecology and EPA agree that we should not waste time on unnecessary studies. An RI/FS will be required, but a significant amount of data that will help us prepare for cleanup already exists. That is why Phase I of the RI/FS focuses on gathering existing data. That data will be used to identify early action areas—areas where cleanup will be initiated as soon as possible, ideally before the RI/FS is completed.

For those areas where more data is needed, additional studies will be necessary. Additional data needs will be determined at the end of Phase I, and filled in during Phase II of the RI/FS. Based on the Phase II studies, additional cleanup areas called long-term action areas will be identified and cleaned up.

Comment #10: Sediment cleanups and warning signs at public access points should be considered.

Response: The goal of the cleanup of the Lower Duwamish Waterway sediments is to protect public health and the environment. Public access and usage of areas of the waterway are factors in determining the extent of risks to human health. The cleanup process will address risks wherever they are found, including public access points.

Ecology and EPA will be working with the Washington State Department of Health to determine if any of the sediments along the shoreline pose immediate threats to public health. If it is determined that a threat does exist, signage and other methods of notifying people to avoid these areas until they are cleaned up will be used. As part of this project, the agencies will be soliciting information from the public and others in order to identify current and future public access points where contamination may be an issue.

Comment #11: Remember the Duwamish is an estuary; think of habitat issues too.

Response: Please see public access and habitat response to Comment #7. We agree that it is important to remember that the waterway is an estuary, and will do our best to clean up and protect the environment of the estuary through this remediation process.

Comment #12: The Order should be issued pursuant to CERCLA Section 106 and not Section 104. This is not a matter where a "study" is required. The Duwamish River and Elliott Bay have been studied for decades. Immediate action is called for.

Response: Section 104 of CERCLA is the appropriate section under which to issue this order. We agree with the commenter that there have been many studies conducted on the river. Phase I of the Remedial Investigation will focus on reviewing existing data and identifying early action areas. Cleanup actions in those early action areas will be conducted under the appropriate CERCLA and /or MTCA authority, which may include Section 106 of CERCLA. However, it will be necessary under Phase II to collect additional data to fill in data gaps. For example, there are extremely limited data on PCB congeners. These Phase II studies will address remaining questions about the extent of contamination, risks to human health and the environment, and the need for additional cleanup.

Comment #13: The Order should require the identification of all emergency removal candidates, all current discharges, and all candidates for Cease-and-Desist Orders, permit revocations and preliminary injunctions, all within 90 days.

Response: Phase I of the Remedial Investigation will focus on reviewing existing data and identifying early action areas. Where appropriate, cleanup actions in those early action areas will be conducted. During the study, significant emphasis will be placed on identifying sources of contamination, including ongoing discharges. The other enforcement tools referenced in the comment have not been ruled out, and could be deployed in the future as appropriate.

Comment #14: The Order should not be arbitrarily or politically limited to studying impacts on the Duwamish River, as the Duwamish flows directly into Elliott Bay. The Order should be modified to also encompass impacts on Elliott Bay.

Response: EPA and Ecology's regulations are similar in how they define a site. EPA's regulations define a Superfund "site" as "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action." The Superfund site boundaries are not fixed at the time of listing. After listing, we look at existing data and do further sampling to determine the nature and extent of contamination. EPA uses the Record of Decision to define what needs to be cleaned up. However, the site boundaries can be modified at any time if sampling data provides new information about the areal extent of contamination.

Comment #15: The Phase I RI report should include the following types of information:

- All Duwamish River and Elliott Bay sampling results going back to 1900, including all sampling on nearby islands, including Kellogg Island,
- All dredging of the Duwamish River and Elliott Bay since 1900 and identify who conducted and oversaw the dredging,
- All dredging of the Duwamish River and Elliott Bay since 1900 and identify who conducted, selected, or oversaw the disposal location for all spoils,
- All dredging of the Duwamish River and Elliott Bay since 1900 and identify who conducted and oversaw all later sampling reports for each disposal location,
- Dredging sampling reports, including all sampling data.

Response: Task 2 of the SOW requires the respondents (Port of Seattle, King County, City of Seattle, and The Boeing Company) to conduct a comprehensive review of the history of the Duwamish Waterway. The respondents will acquire all historical information that can be reasonably acquired in order to describe the history of the Duwamish Waterway. Historical information will be incorporated into the site conceptual model needed to conduct the scoping-phase human health and ecological risk assessments.

The respondents are also required to compile all relevant environmental data into a database that can be used as part of the RI/FS process. Part of the data compilation process will be to identify and evaluate all data sets that are relevant for the RI/FS. All reasonably available data sets will be reviewed for inclusion into the environmental database.

Comment #16: The Phase I RI report should include the following types of information:

- All current and past state, federal, and local discharge permits to the Duwamish River,
- All current and past NPDES permits,
- All current and past monthly water discharge and monitoring reports and all notices of upset,
- All spill and release records. EPA and Ecology cannot know what to sample for until they know every substance that has been discharged into the Duwamish River, for how long, from where, and by whom,
- All Coast Guard reported spills and all ship releases, including the 1978 spill of 250 gallons of 100% PCBs in the lower Duwamish River near Harbor Island when a transformer cracked while being loaded, as reported by the Army Corps of Engineers,
- All available Sanborn maps for the Duwamish River going back to 1900.

Response: The SOW requires the respondents to compile all available information on historic sources of contamination to the Duwamish Waterway as well as all information on efforts to date to control these sources. This information will be useful in providing an understanding of the status of source control, including a number of source control projects that are currently under way. The types of information listed above by the commenter, when available, will be reviewed as part of the Phase I analysis of the historic sources to the Duwamish Waterway.

Comment #17: The Phase I RI report should include an investigation into every person or entity that discharged or potentially discharged any material into the Duwamish River, including Boeing, City of Seattle, King County, State of Washington, Monsanto Chemical, Ford Motor Company, Bethlehem Steel, Issacson Iron Works, etc.

Response: EPA and Ecology anticipate conducting a Potentially Responsible Party (PRP)/Potentially Liable Party (PLP) search for the Duwamish Waterway during the RI/FS process to identify those parties that may be responsible for undertaking cleanup activities within the site.

Comment #18: The Phase I RI Report should include a report on entities discharging to Elliott Bay, such as by the U.S. Navy, as occasionally Duwamish River water levels are very low, and have resulted in a reverse flow of salt water from Elliott Bay several miles up the Duwamish River.

Response: The lower portions of the Duwamish River are part of a tidally influenced estuary and river system. As such, there is a daily movement of high salinity water up and down the lower portion of the river. The respondents will be evaluating the likely influence of the movement of

saline waters on contaminants within the Duwamish Waterway. Also, please see the response to Comment #14.

Comment #19: Will the "off-ramp" option in the Administrative Order on Consent be changed by the Superfund listing?

Response: The "off-ramp" option to the City of Seattle and The Boeing Company will not be affected by the Superfund listing. The term "off-ramp" refers to the option in the Administrative Order on Consent for these two parties to stop performing work on the RI/FS at the end of Phase I or Phase II of the RI. King County and the Port of Seattle have signed on to the AOC without "off-ramps." If the City of Seattle or The Boeing Company did leave the study, King County and the Port of Seattle would continue until the study was complete. Leaving the study would not eliminate any liability that the party might have for contamination at this site.

Comment #20: Section V, paragraph 3 of the Administrative Order on Consent should be changed to reflect that the site will be proposed to the Superfund list.

Response: This section will be updated to be consistent with the proposed Superfund listing.

Comment #21: Ecology, EPA and the natural resource trustees need to communicate and coordinate so that decisions about risk and cleanup are acceptable for both the remedial and the trustee agencies.

Response: Ecology and EPA commit to communicating and coordinating with the trustees during the RI/FS process, and during site cleanup. Ecology and EPA recognize that remedial agency goals and trustee goals for habitat protection and restoration, and compensation for natural resource injury may be different, and will work to seek resolution on this and other issues as the RI/FS and site cleanup proceed.

Comment #22: In Task 3 of the SOW (scoping-phase ecological risk assessment section), will biological testing data be included in order to determine effects on the benthic community?

Response: All literature and other data with reliable documentation, including biological testing data, will be considered in this analysis.

Comment #23: In Task 3 of the SOW (prioritization methodology section, last sentence), replace the word "make" with "may." In Task 11 (first paragraph), replace "is" with "in" to read "as characteristics of sediments in unremediated areas."

Response: The typos "make" and "is" have been noted, and will be corrected.

Comment #24: The SOW does not acknowledge the Lower Duwamish Waterway community advisory group.

Response: Ecology and EPA agree to include in Task 1 Communication that "As appropriate, natural resource trustees and the Lower Duwamish Waterway community advisory group's technical consultant will be included in technical meetings." The primary role of the SOW is to define work tasks for the respondents. The public participation plan and the community advisory group's mission statement are the appropriate documents to describe the role of the community advisory group.

Comment #25: The community advisory group asks to be allowed to participate equally with the agencies and respondents in the following risk assessment activities:

- Developing management goals for the project (contributing to a statement for the desired outcome of the proposed project),
- Characterizing decisions that will be made within the context of the management goals (deciding how to achieve the stated goal),
- Defining the scope, complexity and focus of the risk assessments to be undertaken (selecting the COPCs [chemicals of potential concern], assessment endpoints [environmental values to be protected], and measures [approaches for determining risks]),
- Attending regularly scheduled meetings to review progress during the proposed remedial investigation, and
- Providing written comment on important interim and final documents, e.g., technical memorandum describing risk-based site prioritization methodology.

Response: Ecology and EPA agree to discuss with the community advisory group how to further define their role, and the role of their technical consultant in the work tasks outlined in the SOW. This discussion will include the review and comment on appropriate draft technical documents, appropriate participation in technical meetings, and availability of technical staff from the agencies and respondents to present information at community advisory group meetings.

Comment #26: The community advisory group requests that a process be established to identify when voting participants of the advisory group have a conflict of interest, e.g. they are likely to be named liable parties for cleanup of the waterway site.

Response: EPA's "Guidance for community advisory groups at Superfund Sites" (EPA, December 1995) says, "In order to prevent the PRP (or another interest group) from dominating CAG (community advisory group) discussions, the community shall have the authority to limit

the number of these representatives or designate them as ex-officio members." In this context, 'ex-officio' means that these members could be designated as non-voting.

Comment #27: As presently written, the SOW does not indicate how peer review will be achieved. The community advisory group recommends that a panel of experts other than those from Ecology, EPA or the respondents be formed to provide in-depth peer review of site work.

Response: Ecology and EPA have committed to significant peer review by working with the natural resource trustees and the Washington State Department of Health throughout the site cleanup process.

The Washington State Department of Health will provide additional public health expertise in order to assist Ecology and EPA's human health risk assessment specialists for this site. The trustees for the Lower Duwamish Waterway include the National Oceanic and Atmospheric Administration (NOAA), the U. S. Fish and Wildlife Service, the Muckleshoot Tribe, the Suquamish Tribe, and the Washington State Departments of Ecology, and Fish and Wildlife. The trustees will be involved in the review of appropriate documents generated through the work tasks in the RI/FS SOW. These agencies and tribes bring significant expertise to the work that will be performed at this site.

In addition, Ecology has provided funding for a technical advisor to review and comment on site issues on behalf of the community advisory group. This technical advisor will play an important role in peer review. If significant scientific or technical issues are encountered that require additional resources beyond the participating agencies, respondents, natural resource trustees, and community advisory group, Ecology and EPA are willing to pursue this expertise on an as-needed basis.

Comment #28: The SOW embraces a sound approach that should achieve the stated goal of completing a river-wide RI and preparing an FS work plan. However, there is a general lack of detail and specificity when describing the methods that will be applied. For example the RI will construct a simple food web model following the previous efforts conducted by King County. Another example is that a number of approaches will be considered in identifying priority areas but the SOW does not unequivocally state which approach will be used. In addition, it appears that the respondents are free to use methods that they used before, regardless of past success or failure. Without citation of the primary reference(s), the advisory group was not able to evaluate which methods are best suited for implementation in the Duwamish Waterway.

Response: The SOW was written to provide a framework for conducting an RI/FS and to provide a clear statement of the tasks to be undertaken in order to complete the process. The task descriptions in the SOW provide an overview of the steps to be taken and the general approach to be followed. Much of the detail that the commenter suggested should be in the SOW will be developed as part of the RI and FS process.

Each of the SOW tasks will be completed based on a "building block" approach in which decisions on the components needed to complete a task will be made prior to completion of that task. For example, relative to a commenter's statements about selecting an approach for identifying priority areas, the respondents are required to produce a technical memorandum which reviews all of the approaches that could be used to identify priority areas and to make a recommendation on which approach(es) should be used. This technical memorandum will then be reviewed by the agencies, and an approach selected. Work on the remainder of the tasks would not continue until the selection process was complete. A similar process will be used for each of the technical tasks listed in the SOW. Table 2 of the SOW provides a list of the deliverables that are required to be submitted by the respondents to the agencies for review and approval. Each task includes appropriate deliverables that will be used for making decisions on the critical components that are required for the completion of that task. A number of specific comments were made by the commenter involving Tasks 2, 3, and 4. A few of these comments are addressed in this response as examples, but as noted above, all detailed comments will be addressed and reviewed by agencies during the RI/FS process through deliverables.

Comment #29: Will the risks from endocrine disrupting substances (EDSs) be assessed? The community advisory group recognizes that for many EDSs, there are little or no data, and assessment during the Phase I RI will be necessarily limited to those EDSs for which data are available. The community advisory group recommends that additional field sampling during the Phase II RI be undertaken to assess risks from a wider spectrum of EDSs.

Response: An initial determination of which chemicals will become chemicals of concern for the Lower Duwamish Waterway will be made during the Phase I scoping-phase risk assessments (both human health and ecological risk assessments) that will be conducted as part of Tasks 3 and 4 of the SOW. As noted by the commenter, the Phase I scoping-phase risk assessments will rely on existing data, which includes information on over 50 chemicals and contaminant classes. Some of these contaminants are suspected of being EDSs and the relevance of these contaminants, in the concentrations found in the waterway, will be evaluated as part of the scoping-phase risk assessments.

The tasks that will be undertaken as part of the Phase II RI/FS will be largely dependent upon the results of the Phase I tasks outlined in the SOW. Task 7 requires the respondents to identify additional data that may be required to complete the RI. Data gaps will be identified based on the analysis and uncertainty assessments in the Phase I scoping-phase risk assessments. A decision on contaminants that will be sampled, including EDSs, will be made based on the data needs analysis conducted in Task 7. The respondents are required, as part of Task 7, to submit to the agencies for review and approval a technical memorandum identifying additional data needs for the RI.

Comment #30: The first paragraph in Task 3 mentions several potential pathways of exposure that will be evaluated: 1) fish/shellfish consumption, 2) dermal contact with sediment, and 3) direct ingestion of sediment. Perhaps missing is a pathway of exposure involving resuspension of sediments and adherent chemicals in the water column.

Response: The SOW states that the scoping-phase human health risk assessment will use as a starting point those risk assessments that have been previously conducted in the vicinity of the Lower Duwamish Waterway. These include two risk assessments conducted for EPA, and a King County Department of Natural Resources assessment conducted to determine the water quality risks associated with combined sewer overflows. Based on these assessments and an interim exposure assessment, all potentially complete exposure pathways will be included in the Phase I scoping-phase risk assessment. This process includes the possibility of identifying additional pathways.

Comment #31: The SOW says that exposure scenarios will be evaluated for those population groups who consume above-average amounts of fish and shellfish. It also may be useful to consider a determination of risks based on consumption of fish and shellfish increasing as the waterway is remediated.

Response: A comprehensive fish consumption survey for the Lower Duwamish Waterway has not been conducted. Consequently, the consumption rates that will be applied in the scoping-phase risk assessment will be based on regional consumption surveys that focused on subpopulations thought to have above-average fish and shellfish consumption rates. Such studies include: Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region (August 2000), Asian & Pacific Islander Seafood Consumption Study in King County, WA (May 1999), and A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region (October 1996). Fish and shellfish consumption risks associated with specific remedial alternatives will be addressed in the Feasibility Study. Ecology and EPA agree that it is appropriate to evaluate whether or not fish or shellfish consumption rates may increase as a result of resource cleanup and to consider use of these rates in future use scenarios.

Comment #32: The SOW indicates that exposure point concentrations will be averaged over an area of the waterway where fish and shellfish are derived for consumption. This approach misses or diminishes the affect of hotspots, where sediment concentrations can be much higher (e.g., CSO footprints). Averaging concentrations over an unspecified area of the waterway also assumes that fish or shellfish, and even fishing, is uniformly distributed, which is not the case. By employing this convention, there is a real potential for not identifying all candidate sites for early remediation.

Response: An individual fish or shellfish found in the Lower Duwamish Waterway that may be consumed by people will accumulate chemicals over its entire home range. Therefore, it is important that estimating exposure to sediment contamination through the fish consumption pathway be done over a similar area. The commenter is correct in noting that the distribution of fish and shellfish is not uniform within the waterway. Site usage by individual species will be determined using professional judgment based on habitat characteristics such as depth and substrate. Site usage will serve as a modifying factor for the area-weighting calculations, such that areas where fish and shellfish are expected to spend more time are given a greater weight.

With respect to this method potentially ignoring hotspots, it should be noted that area weighting will not be performed for all potential receptor groups. For example, a point-by-point comparison to State Sediment Management Standards will be conducted for benthic invertebrates; thus, hot spots would be identified.

Comment #33: In the second paragraph (see page 5), mention is made of using *all relevant benthic tissue effects data* but the SOW does not specify which data will be used. Does this information have to be gathered from the scientific literature?

Response: Data are available relating chemical concentrations in tissue to effects for a small subset of chemicals (e.g., tributyl tin) for which benthic organisms are the most sensitive receptors. The peer-reviewed literature and other data with reliable documentation will be considered in this analysis.

Comment #34: Also in the second paragraph (see page 5), the SOW calls for the use of TRVs (threshold risk values) to *estimate risks*. The selection or calculation of the TRV is easily biased. Use of a TRV involves a comparison of a calculated dose or other measure of effect with some standard or TRV, which is a dose that is known to produce an effect of specified magnitude. Also, which specific TRV will be used?

Response: A draft effects assessment will be submitted for agency review with specific TRVs proposed along with a detailed rationale for their selection.

Comment #35: The use of *larger spatially averaged sediment concentrations* to estimate exposure for mobile species such as fish and birds tends to diminish the effects of hotspots (e.g., CSO footprints). The SOW also says that *site usage* will be considered but to the best of our knowledge, there is little or no site usage data for fish or crabs. There may be more site usage data available for birds, e.g., great blue heron, spotted sandpiper, bald eagle.

Response: As discussed in Comment #32, spatially averaged concentrations will be based on the home range of the specific receptor (i.e., fish and birds) in question as well as any site usage data available. Because the availability of site usage data will be variable depending on the receptor, best professional judgment may be required to assess site usage depending on habitat availability and species preferences. The consequences of important best professional judgement assumptions will be evaluated in the uncertainty assessment.

Comment #36: The SOW does not adequately address the need to achieve source control prior to the beginning of remediation. While the SOW provides for collection of information on potential sources of contamination and historical source control studies, the SOW doesn't indicate in any detail how this information will be used, other than to screen candidate sites for early remediation.

Response: Source control along the Lower Duwamish Waterway is being addressed through a number of avenues. First, the SOW does require the respondents to compile all available information on sources of contamination to the waterway as well as all information on efforts to date to control these sources. This information will be useful in providing an understanding of the status of source control, including a number of source control projects that are currently under way. A limited list of past and ongoing source control measures includes work by King County on the Lander Street CSO separation project, the Norfolk CSO cleanup and ongoing work on the Diagonal/Duwamish CSO, and work by the City of Seattle through the installation of automatic monitoring devices for all CSOs and construction of additional storage capacity within the CSO system to bring all CSOs into NPDES permit compliance. In addition, sediment recontamination modeling is being undertaken for King County's Sediment Management Plan to determine if current CSO overflows add to the contamination of aquatic sediments. Also, please see the response to Comment #3.

In addition to these continuing efforts, source control will be addressed at all sediment areas within the site that require cleanup action. Areas that are identified for possible early and long-term actions will undergo source control evaluation prior to any cleanup activity. Figure 2 of the SOW identifies the general activities that will be undertaken, including data collection and design. It is during this phase that source control analysis would be undertaken and source control measures would be designed.

Ecology will have two additional full-time staff to support the continuing source control efforts along the waterway. Source control work will be coordinated with the Lower Duwamish Waterway RI/FS work to ensure transfer of information between the two efforts. Ecology and EPA will draft a source control strategy document for this work, and will seek input from the community advisory group, the natural resource trustees, the respondents, and others as appropriate. Ecology and EPA will be looking at all potential sources of contamination to sediments, including material that may come from upstream (the watershed), and groundwater that enters the waterway.

Comment #37: Property owners or operators along the Duwamish may have contaminated sediments on their shoreline that they were not responsible for contaminating. The identification of additional responsible parties for this site should take this into account.

Response: EPA and Ecology anticipate conducting a PRP search for the Duwamish Waterway during the RI/FS process. Searches will be undertaken to identify those parties that may be

responsible for undertaking remediation activities within the site. EPA and Ecology anticipate that viable responsible parties will be available to implement the necessary remedial action. CERCLA and MTCA also have provisions to provide settlement protection to minor parties.

Comment #38: I would prefer that the Duwamish Waterway is referred to as the Duwamish Estuary, because that gives a different meaning to what we are talking about.

Response: The Duwamish Waterway is the congressionally authorized Federal navigation channel, located within the Duwamish River. The site name, Lower Duwamish Waterway, was selected because the majority of the site lies within the waterway. Ecology and EPA recognize that the Lower Duwamish serves ecological, tribal culture and fisheries, recreational and economic functions. CERCLA, MTCA and the Sediment Management Standards regulations direct the agencies and respondents for this site to address these functions during the site cleanup.

Comment #39: I hope that Ecology and EPA look not just at the Duwamish Estuary, but the whole watershed and groundwater issues for sources of contamination to the river.

Response: Ecology and EPA will be looking at all potential sources of contamination to sediments, including material that may come into the waterway from upstream (the watershed), and groundwater that enters the waterway. Also, please see the responses to Comments #36 and #42.

Comment #40: The agencies need to do a really good job of addressing ARARs (Applicable or Relevant and Appropriate Requirements) at this site, because the work falls under a number of regulatory schemes.

Response: Ecology and EPA agree, and have been working together over the past year on identifying all of the applicable, or relevant and appropriate requirements, and discussing how best to address them at the site.

Comment #41: The site cleanup decisions need to be carefully considered, because the results will impact the river, ecology and people around the river for generations to come. It is important that decisions yield results good for the long-term, not just for fast-track cleanup.

Response: Ecology and EPA agree. The RI/FS does look for early action cleanup opportunities, and we hope to initiate those cleanups when appropriate. Our regulations require us to consider many factors in cleanup decisions, including the short and long-term consequences of any cleanup decisions, including early actions. Long-term cleanup actions will be required if the early actions do not adequately address risks to human health and the environment.

Comment #42: The Clean Water Act requires that loading of contaminants be addressed through Total Maximum Daily Loads (TMDLs) and related NPDES permit management. It is important to look at existing NPDES permits, upland sites and groundwater—the entire contribution coming to the river.

Response: Ecology and EPA agree. The Lower Duwamish Waterway cleanup will need to address these TMDL, NPDES and related source control issues. Also, please see the responses to Comments #3 and #36.

Comment #43: Many small businesses that may be responsible for some of the costs in cleaning up the site are not represented in the current negotiations for this site. EPA has a duty to make sure that large businesses do not shift their responsibility onto the small businesses.

Response: Ecology and EPA agree. The current AOC and SOW address only the RI/FS portion of the cleanup process. EPA and Ecology believe that working with the four parties interested in conducting the RI/FS will expedite the investigation and ultimately the cleanup of the site. When cleanups are carried out, other appropriate parties will be brought into the process. Settlement protection for parties who may have contributed only a very small amount of contamination is available under CERCLA and MTCA. Ecology and EPA will carefully consider who should participate in these cleanups.

Comment #44: The cleanup of the Duwamish will be very important to the community, Puget Sound, and wildlife such as Orca whales, that are contaminated by PCBs. The commenter challenges Ecology and EPA to make this cleanup a model for public involvement, and to communicate in a way that will help the community understand why the complex technical issues involved with cleaning up the Duwamish should matter to them.

Response: Ecology and EPA agree that this is an important site and that public involvement and communication is essential. The agencies will work with the community and the community advisory group to effectively involve the community and communicate the issues for this site. Also, please see the response to Comment #6.

Comment #45: Many important decisions for this site will be made as the SOW for the RI/FS is implemented. These decisions, such as risk assessment parameters and identifying chemicals of concern, will be made in-between formal public comment periods. Stakeholders and the public need to have an opportunity to provide direct input into these decisions, rather than waiting for the next formal public comment period.

Response: Ecology and EPA are committed to providing meaningful public involvement to the stakeholders and the public for this site, above and beyond the legally required public comment

periods designated by either MTCA or CERCLA. The public participation plan will provide more detail on how we will implement public involvement and communication for this site.

Comment #46: NOAA is interested in early habitat restoration activities and suggests they be coordinated with the RI/FS.

Response: Ecology and EPA recognize the importance of habitat restoration in the Duwamish, and will coordinate cleanup actions with habitat restoration opportunities at this site. Also, please see the response to Comment #7.

Comment #47: The Seattle District of the Army Corps of Engineers (Corps) should be involved in the RI/FS.

Response: EPA and Ecology welcome the opportunity to discuss the Corps involvement in the RI/FS.

Comment #48: The RI/FS study should consider excluding the navigational channel from the turning basin north to the First Avenue Street Bridge.

Response: EPA's regulations define a Superfund "site" as "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action." The Superfund site boundaries are not fixed at the time of listing. After listing, we look at existing data and do further sampling to determine the nature and extent of contamination. EPA uses the Record of Decision to define what needs to be cleaned up; however, the site boundaries can be modified at any time if sampling data provides new information about the areal extent of contamination. Usually contamination is not uniform, so even within a "site" there are clean and contaminated areas. The clean areas are not subject to Superfund action. EPA and Ecology will continue to work with the Corps on this issue.

Comment #49: Maintenance of the navigational channel in the Duwamish Waterway NPL study area is of immediate concern. Corps regulations restrict maintenance dredging at NPL sites, so listing could require the Corps to cease maintenance dredging in the Duwamish Waterway.

Response: If the Corps dredges and properly disposes of sediments under the regulations and policies established by the Dredged Materials Management Program, Superfund liability should not be an issue. EPA and Ecology understand that the Corps policies may be revised soon to allow necessary maintenance dredging at NPL sites. EPA and Ecology will continue to work with the Corps to resolve maintenance dredging issues.

Comment #50: The role of the Muckleshoot Tribes in decision making, the review of deliverables, and participation in meetings is completely missing. The tribe expects full involvement in the process. Full involvement should include sufficient time to review and comment on all draft work products and deliverables.

Response: Administrative orders which govern the relationship between the agencies and potentially responsible or liable parties (PRPs and PLPs, respectively, under CERCLA and MTCA), are not an appropriate mechanism or tool for intergovernmental relationships. The tribe will be given an opportunity to participate in the RI/FS process in a meaningful way consistent with EPA policy and guidance. EPA and Ecology will continue ongoing discussions with the tribe to better define their role and level of participation in the process.

EPA and Ecology not only agree with, but also encourage, the full involvement of the tribe and other natural resource trustees in the development and implementation of cleanup decisions for the site. EPA and Ecology expect to enter appropriate interagency and intergovernmental agreements with the trustees and tribes.

Comment #51: Page 2, Task 1, Second Sentence. This sentence states that natural resource trustees will be included in technical meetings, "as appropriate." Who determines when this is appropriate? This is too vague and subjective. Please replace the sentence with the following: "Natural resource trustees will be included in all technical meetings and other meetings, as appropriate."

Response: Please see the response to Comment #50.

Comment #52: Page 2, Historical Review, Site Characterization, and Data Compilation, Third Paragraph. Please insert "At a minimum" at the beginning of the sentence, so it reads, "At a minimum, the following types of data will be assembled...."

Response: The suggested change has been incorporated into the final SOW.

Comment #53: Page 6, Task 3, Study Design for Scoping-Phase Risk Assessments, Scoping-phase ecological risk assessment, first line on the page. Please insert the phrase "but modified if appropriate" behind "King County (1999)." This will allow for the King County Model to be the starting point for bird and mammal risk assessment. However, the model could be modified, if appropriate.

Response: The current language in the SOW, "The model will be based on previous efforts conducted by King County DNR (1999)," already allows for the model to be modified as appropriate. The suggested change has not been incorporated into the SOW.

Comment #54: Page 6, Task 4, Risk Characterization and Priority Area Identification, first paragraph in section. This paragraph states that the scoping-phase risk assessment will not be completed until all of the interim deliverables from Task 3 are completed. The last deliverable in Task 3 relates to the prioritization methodology, and need not be completed prior to conducting the scoping-phase risk assessments.

Response: Based on the proposed schedule contained in Figure 3, the prioritization methodology for potential early action areas will not slow down preparation of the scoping-phase risk assessment. EPA and Ecology would like to have the prioritization methodology completed prior to conducting the scoping-phase risk assessment so that the results don't unduly influence the prioritization methodology.

Comment #55: The AOC does not provide any definition of the Lower Duwamish Waterway site. Please define the site boundaries, or consider referring to Figure 1, p. 12 of the SOW, which provides a map of the site.

Response: EPA and Ecology's regulations are similar in how they define a site. EPA's regulations define a Superfund "site" as "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action." The Superfund site boundaries are not fixed at the time of listing. After listing, we look at existing data and do further sampling to determine the nature and extent of contamination. EPA uses the Record of Decision to define what needs to be cleaned up. However, the site boundaries can be modified at any time if sampling data provides new information about the areal extent of contamination. As pointed out, Figure 1 of the SOW does identify the initial study area.

Comment #56: Page 4, Section IV. Statement of Purpose, Paragraph 1, line 7. Please delete the parenthetical "if any." The phrase provides no additional meaning to the sentence.

Response: The change will be made in the final AOC.

Comment #57: Page 5, Section V. Findings of Fact, Paragraph 3, line 1. Please change the line to read: "The Site has been evaluated and scored for the NPL." This change is to represent that EPA has proposed the site for the NPL.

Response: A change to indicate that EPA has proposed the site for the NPL will be included in the final AOC.

Comment #58: Page 7, Section VII. Findings of Fact, Paragraph 6, lines 4-6. Please delete the sentence "Pursuant to RCE 70.105D.080 and WAC 173-340-550(5), compliance with this Order in the Department of Ecology's view is the substantial equivalent of a department supervised remedial action." It is unclear what this statement means, but it could be interpreted to mean that respondents' compliance with the AOC constitutes the same as taking remedial action.

Response: The definition of a remedial action under MTCA is broad, and includes all RI/FS activity. Therefore, compliance with the AOC does constitute a remedial action under MTCA. However, compliance with this AOC does not release responsible parties from participation in further cleanup actions, including Cleanup Action Plans (CAPs) and/or Records of Decision (RODs) and the cleanup actions directed by those CAPs and RODs. Ecology and EPA will retain this sentence.

Comment #59: Page 14, Section XVIII. Work to be Performed, Paragraph H (1), Memorandum on Remedial Action Objectives. Please describe when the Memorandum on Remedial Action Objectives (RAOs) is due. This is important, since the next deliverable is due within 30 days of this deliverable.

Response: The AOC will not call for a time for the RAOs to be submitted. It is the first document required in the phase of the work entitled: Development and Screening of Alternatives. In the AOC, submitting the Memorandum on Remedial Action Objectives essentially starts the "clock" for the rest of the deliverables for this phase of the work. The actual time line for submitting the Memorandum on Remedial Action Objectives (i.e., when it would occur in the course of the Lower Duwamish Waterway studies) will be set during the development of the work plans for the Phase II RI and FS studies.

Comment #60: Page 15, Section XVIII. Work To Be Performed, Paragraph 1, Line 10 and Paragraph 2, Line 2. Please change the phrase "to EPA and Ecology" to "to EPA, Ecology, and the natural resource trustees." It is important for effective coordination that the trustees be involved in the comparative analysis presentation.

Response: Ecology and EPA plan to give all such deliverables to the trustees pursuant to interagency and intergovernmental agreements with the trustees. Also, please see response to Comment #50.

Comment #61: Page 18, Section IX. Baseline Risk Assessment, last sentence. Please append the following phrase to the last sentence: "prior to initiating cleanup." It is important to clarify that the baseline risk assessment does not assess risks following any early action cleanups in the river.

Response: EPA and Ecology support the goal of implementing early action cleanups at the site, based on the outcome of Phase I of the SOW. It is possible that an early action cleanup may be completed before the baseline risk assessment is done. If this occurs, a residual human health and ecological risk assessment will be completed that accounts for the effects of the early action cleanup. Exactly how the residual risk assessment will account for cleanup will be presented to the agencies for review as a deliverable in Task 11. This deliverable will be made available to the natural resource trustees and the community advisory group's technical advisor for review. The suggested change is not being incorporated into the AOC.

Comment #62: Page 18, Section X. Modification of the Work Plan, Paragraph 1, first sentence. This sentence states that the respondents are the only parties that can identify a need for additional data. This sentence should be changed to indicate that the respondents, EPA or Ecology can identify a need for additional data.

Response: The language in the AOC already provides for the respondents, EPA, or Ecology to identify a need for additional data. Paragraph 1 of this section addresses the scenario where the respondents identify additional data needs. Paragraph 3 addresses the scenario when EPA or Ecology identifies the need for additional work, which could include a request for additional data. The suggested change is not being incorporated into the AOC.

Comment #63: Page 20, Section XII, Final RI/FS Proposed Plan, Public Comment, Record of Decision/Cleanup Action Plan, and Administrative Record, Paragraph 3, lines 7 and 8. The sentence on these lines states that respondents must additionally submit any previous studies conducted "under state, local, or other federal authorities." Please delete "under state, local, or federal authorities," so that all pertinent information related to the selection of the response action is provided.

Response: EPA and Ecology generally agree with the comment. However, the respondents have no legal authority or means to acquire private studies by anyone but themselves. EPA and Ecology will work with the respondents to make appropriate changes to the AOC regarding private studies.

Comment #64: Page 21, Section XIV, Sampling, Access, and Data Availability/Admissibility, Paragraph 2, lines 4 and 5. Please delete "by EPA and Ecology (and their authorized representatives)." Respondents should allow splits to be taken by any party designated by EPA and Ecology.

Response: Only EPA and Ecology (and their authorized representatives) have authority under this legal agreement to take split samples. However, EPA and Ecology are willing to discuss sharing split samples with appropriate parties. The suggested change is not being incorporated into the AOC.

Comment #65: Page 32, Section XXI, reservations of Rights and Reimbursement of Costs. This Section needs to also include a reservation for both EPA and Ecology of the right to bring action against respondents under Section 107 of CERCLA, 42 U.S.C. 97697(f) for recovery for natural resource damages. The same agencies that are parties to this agreement also have trusteeship for natural resources and it should be made clear that the remedial divisions of these two agencies cannot proceed under this AOC in a manner that impacts the rights and responsibilities of the natural resource trustee divisions of the same agencies. Ecology's natural resources trusteeship is addressed in Paragraph 7, but EPA's is not.

Response: EPA has no authority to bring CERCLA 107(f) actions and therefore may not reserve such a right. As pointed out by the comment, Ecology's natural resources trusteeship is addressed in Paragraph 7.

Comment #66: Page 35, Section XXII. Payment of EPA Oversight Costs, Paragraph 3, lines1 and 3. Please change the work "should" to "shall."

Response: The suggested change will be incorporated into the final AOC.

Comment #67: Page 35, Section XXIII. Disclaimer, Paragraph 1, line 2. Please change the typographical error "Site. and, by entering" to "Site, and by entering."

Response: The typographical error will be corrected in the final AOC.

Comment #68: Page 39, Section XVI. Effective Date and Subsequent Modification, paragraph 2. This paragraph states that the Consent Order can be amended by mutual agreement of EPA, Ecology, and respondents. Any substantive change to the Consent Order should undergo public review and comment.

Response: Ecology agrees that any substantive change to the Order, as defined by MTCA, would

require public review and comment.

Comment #69: EPA has stated that it may propose to list the Lower Duwamish Waterway site on the National Priorities List unless a tolling agreement to extend the statute of limitations on natural resource damage claims is executed. Boeing has already met that condition by signing such an agreement.

Response: EPA and Ecology worked closely together to develop a cleanup approach for the Lower Duwamish Waterway that would not have required listing the site on the NPL. That approach included a proposed agreement called an Administrative Order on Consent, with four of the major property owners on the waterway. The four parties are the Port of Seattle, King County, the City of Seattle, and The Boeing Company. In order not to list the site on the NPL, EPA required these parties to meet several criteria, including signing agreements with the natural resource trustees to protect the trustees' rights to pursue claims for natural resource injuries at the waterway site. When the trustees and Boeing were unable to reach agreement on this critical requirement, EPA proceeded with proposing the site to the NPL. In October 2000 Washington Governor Gary Locke concurred with EPA's decision on the proposal. The site was formally proposed to the NPL in the December 1, 2000 Federal Register.

Comment #70: It is crucial that EPA and Ecology actively involve NOAA and the other trustees in a timely fashion as the RI/FS and cleanup process moves forward. It is critical that NOAA and the other trustees have an opportunity to provide ongoing timely input to technical documents as the RI/FS process proceeds, to assure that the specific methods being proposed to study and evaluate risks to resources are sufficient for our evaluation needs. The trustees anticipate providing a draft cooperative management agreement to EPA and Ecology for consideration before the end of the year.

Response: EPA and Ecology look forward to discussing an agreement with the trustees. Also, please see response to Comment #50.

Comment #71: NOAA notes for the record that data gathering and analysis described in the draft SOW have not been designed with the data needs of a natural resource damage assessment in mind.

Response: The trustees are welcome to suggest additional data gathering and analysis for consideration by Ecology, EPA and the respondents.

Comment #72: NOAA recommends that the SOW require that the following tasks be performed during the Phase I RI, to target source control/cleanup actions that are not currently addressed or are inadequately addressed:

- Compilation of existing contaminant source data (already identified in the 11th bullet on page 3 of the SOW);
- Identification of the mechanisms and prospective timeframes under which some of these sources are currently being addressed; and
- Identification of remaining data gaps in the presence of potential sources and gaps in addressing potential sources of contamination to the Lower Duwamish River.

Response: Please see responses to Comments #16 and #36.

Comment #73: NOAA wishes to reiterate that the baseline risk assessment must specifically address risk to endangered species, including chinook salmon and bull trout. While it may be possible to use a surrogate resident species in the screening-level Ecological Risk Assessment, it will ultimately be necessary to demonstrate in the Endangered Species Act Biological Assessment for the final decision that the cleanup (or no-action decision) is protective of these species. Surrogate fish will not be accepted for this purpose.

Response: Draft technical memorandums, and work plans for the baseline and residual Ecological Risk Assessment will be submitted for agency review during Phase I of the RI. In accordance with appropriate interagency and intergovernmental agreements with the trustees and tribes, this material will be made available for review. Also, please see response to Comment #50.